ICC CODES - PUBLIC COMMENT FORM

FOR PUBLIC COMMENTS ON THE "2008 REPORT OF THE PUBLIC HEARINGS"

PLEASE SEE BACK OF FORM FOR PROCEDURES ON SUBMITTING PUBLIC COMMENTS. ALL SUBMITTALS MUST COMPLY WITH THESE PROCEDURES.

CLOSING DATE: All Comments Must Be Received by June 9, 2008. The 2008 Final Action Hearings will be held September 17-23, 2008 in Minneapolis, Minnesota

1) Please type or print clearly: Public comments will be returned if they contain unreadable information.

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Jurisdiction/Company:	U.S. Department of Energy				
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2) Copyright Release: In accordance with Council Policy #28 Code Development, all Code Change Proposals, Floor Modifications and Public Comments are required to include a copyright release. A copy of the copyright release form is included at the end of this form. Please follow the directions on the form. This form as well as an alternative release form can also be downloaded from the ICC website at www.iccsafe.org. If you have previously executed the copyright release, please check the box below:

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3) Code Change Proposal Number:
Indicate the Code Change Proposal Number that is being addressed by this Public Comment: EC71 Part II - IRC

4) Public Comment: The Final Action requested on this Code Change Proposal is: (Check Box)

X **Approved as Submitted (AS):**	☐ **Approved as Modified** by this Public Comment (AMPC)**:**	☐ **Approved as Modified** by the Code Committee as Published in the ROH (AM):	☐ **Approved as Modified** by Assembly Floor Action as Published in the ROH (AMF)**:**	☐ **Disapproved (D):**

5) Proposed Modification (AMPC only):

6) Reason (State the reason and justification to support the Public Comment. Include a bibliography of any substantiating material. It is the responsibility of the commenter to make the material available at the Final Action Hearing):

The purpose of this proposal is to reduce energy losses in air-ducted distribution systems.

This proposal has already been approved by the IECC committee and should be incorporated into the IRC as well for code consistency.

The IRC committee reason states that "verification of ducts can be achieved by visual inspection". The Department of Energy disagrees that visual inspection of ducts is adequate. An open survey conducted by DOE in 2006 found that 85% of 58 respondents (readers of "Setting the Standard": code officials, builders, etc.) believe that the code requirements based only on visual inspection are not adequate (U.S. DOE, 2006). Ducts are often located in difficult to access areas such as attics and crawl spaces. Cracks and other leakage points in ducts may not be visible because they are covered by insulation, hidden from view, or simply too small to be readily apparent to the human eye. Testing of completed homes in Washington state where prescriptive code requirements for duct sealing apply "showed no significant improvement" over non-code homes (Washington State University 2001). Another study from Washington State concluded: "Comparisons to air leakage rates reported elsewhere for homes built before the implementation of the 1991 WSEC show no significant improvement by the general population" despite years of training emphasizing duct sealing (Hales et al. 2003).

Numerous other studies around the nation show substantial duct leakage in new homes, including those in states with codes requiring duct sealing. For example, a 2001 study of 186 houses built under the Model Energy Code in Massachusetts reported "serious problems were found in the quality of duct sealing in about 80% of these houses" (Xenergy 2001). Pressurization tests in 22 of these houses found an average leakage to the outside of the house of 183 cfm, or 21.6% of the system flow, at a pressure of 25 Pascals.

The energy savings of improved duct sealing are very substantial. A California study estimated a sales-weighted state annual average savings from duct sealing of 38 therms and 239 kWh for a 1761 ft^2 house (Hammon and Modera 1999). This is based on an estimated 12% improvement in duct efficiency based on previous studies indicating a 12-15% improvement potential. Assuming $1.20/therm gas and 9 cents/kWh electricity, this is a savings of $67/year. As much of California's population is in mild climates savings should be considerably higher on a national average.

Hammon and Modera (1999) estimate a cost of $214 for materials and labor plus $131 to $163 for testing and suggest costs will be even lower in a mature market. This does not account for possible cost savings from downsizing HVAC systems because of decreased design loads. Even with the conservatively low California energy savings estimate, this is a simple payback of 5.1 to 5.6 years. The Journal of Light Construction (2003) quotes an even lower cost of $220, which indicates a simple payback of under 4 years. Duct pressurization testing equipment commonly known as "duct blasters" cost about $1500-2000 (Sherman, 2004, PDF page 171). Presumably, this equipment would come down in price as the market for this equipment grows.

The proposed leakage limits from duct testing sets a modest target that is reasonable for a mandatory minimum code. For example, Energy Star Qualified Homes must have a leakage of 6 CFM per 100 ft^2 of conditioned floor area (or 4 CFM if the "builder option packages" are used) compared to the 8 cfm per 100 ft^2 proposed here. The proposal allows a variety of compliance methods. Notably, the testing can be done at rough-in stage immediately after the ducts are installed. This allows potentially costly call backs to be avoided if the tested leakage rate exceeds code requirements. Testing is not required if the air handler and ducts are inside the conditioned space.

The residential building energy efficiency requirements in ICC codes have not had a substantial national improvement in 14 years, since 1993. The most notable improvement since 1993 was the addition of the 0.40 SHGC requirement for glazing, and that applies to only the southern third of the nation and occurred 10 years ago. During that time, fuel prices have increased dramatically and environmental concerns from energy usage (notably global warming) have come to the forefront. It's time for the ICC to take serious action to improve energy efficiency in buildings and the Department of Energy believes improved duct systems are the place to start. Poor duct sealing is a widespread problem that will result in senseless energy loss for many decades after a new building is occupied. This proposal represents a reasonable and cost effective improvement that is badly needed.

References:

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